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Biology 240 General microbiology Fall 2008

Class will meet **Mondays** and **Wednesdays**

Laboratory (83068)	5:30 – 6:45	Building 16	Room 0204
Lecture	7:00 – 8:20	Building 17	Room 0209
Laboratory (90162)	8:35 – 9:50	Building 16	Room 0204

Prerequisites: You must have taken college-level chemistry and biology classes with laboratory to remain in and benefit from this class (prerequisites per school catalog: CHEM 192, 210, or 410 or equivalent and either BIOL 110 or 130 or equivalent).

Course description: Fundamental concepts and general principles of cell structure and function, classification and diversity of microorganisms, biochemical processes, genetic basis of microbial growth and evolution, immunology, and the interactions between microbes and the human host will be emphasized.

Note: Microbiology is one of the most exciting science disciplines to date. This course is your chance to immerse in the basics of microbiology. It is going to be both demanding and rewarding. Therefore, attendance in class is expected, in the laboratory mandatory.

Recommended text: Lecture overheads in pdf format for downloading will be available before class meets on the web site http://esd.lbl.gov/ESD_staff/torok/torok_lectures.html. Textbooks, laboratory manuals, and additional readings listed at the end of the syllabus are recommended as means and tools of knowledge enhancement.

Evaluation: **Testing is based on material covered in class and the laboratory**

2 lecture midterms	100 points, each
lecture final exam	200 points
2 laboratory exams	100 points, each
4 unannounced laboratory quizzes	20 points, each
unknown microorganism report	50 points
laboratory attendance	30 points

Grading:

≤60%	F
61 – 70%	D
71 – 80%	C
81 – 90%	B
91 – 100%	A
your grade = your total/760 points x 100	

Students may be given the opportunity to accept their grades without taking the final exam if they have achieved 86% or better at the time of the final exam.

#	Date	Lecture topic	Laboratory topic
1	August 18	Class logistics Introduction to microbiology	Introduction Basic biosafety]
2	August 20	Chemistry of life	Quiz #1 / Aseptic techniques
3	August 25	Microbial world and its evolution	Microscopes, microscopy
4	August 27	Microbial cell structure and function 1.	Staining 1.
5	September 1	Labor Day (Holiday)	
6	September 3	Microbial cell structure and function 2.	Staining 2.
7	September 8	Microbial metabolism 1.	Cultivation of microorganisms
8	September 10	No lecture planned	
9	September 15	Microbial metabolism 2.	Evaluation of previous experiment
10	September 17	Microbial genetics	Enumeration methods
11	September 22	Recombinant technologies, synthetic biology	Calculations
12	September 24	Microbial growth	Growth curve
13	September 29	Control of microbial growth	Quiz #2 / Disinfection
14	October 1	Student presentation "Biological evolution"	Laboratory exam #1
15	October 6	Microbial evolution and diversity / Viruses	Evaluation of previous experiment
16	October 8	Microbial evolution and diversity / Bacteria 1.	Ames test
17	October 13	Microbial evolution and diversity / Bacteria 2.	Evaluation of previous experiment Biochemical tests 1.
18	October 15	Microbial evolution and diversity / Archaea	Biochemical tests 2. Midterm Q&A
19	October 20	No lecture planned	
20	October 22	Midterm #1	No laboratory exercise planned
21	October 27	Microbial evolution and diversity / Eucarya 1.	Biochemical tests 3.
22	October 29	Microbial evolution and diversity / Eucarya 2.	Quiz #3 / Unknown microorganism 1.
23	November 3	Immunology 1.	Unknown microorganism 2.
24	November 5	Immunology 2.	Filamentous fungi and yeasts
25	November 10	Veterans' Day (Holiday)	
26	November 12	Immunology 3.	Staph/Strep 1.
27	November 17	Microbial mechanisms of virulence Antimicrobial drugs	Staph/Strep 2. Coagulase test
28	November 19	Microbial human diseases 1.	Midterm Q&A
29	November 24	Midterm #2	Kirby-Bauer test
30	November 26	Thanksgiving (Holiday)	
31	December 1	Microbial human diseases 2.	Kirby-Bauer evaluation / Quiz #4
32	December 3	Microbial human diseases 3.	Laboratory exam #2
33	December 8	Microbial human diseases 4.	Water analysis
34	December 10	Student presentation "Microbes in the news"	Confirmatory tests Completed test
35	December 15	Final examination	

Recommended textbooks, laboratory manuals, and additional readings:

Alexander, S. K. and Strete, D. 2006. Microbiology: a photographic atlas for the laboratory, Benjamin/Cummings Publishing Company.

Brown, A.E. 2007. Benson's microbiological applications: Laboratory manual in general microbiology, Complete Version, 10th Edition, McGraw-Hill Higher Education.

Cappuccino, J.G. and Sherman, N. 2008. Microbiology, a laboratory manual, 8th ed., Benjamin/Cummings Publishing Company.

Hogg, S. 2005. Essential microbiology. John Wiley and Sons, Inc.

<http://www.asm.org/Education/index.asp?bid=10051>

<http://www.microbelibrary.org>

Leboffe, M.J. and Pierce, B.E. 2005. A photographic atlas for the microbiology laboratory, 3rd edition, Morton Publishing Company.

Leboffe, M.J. and Pierce, B.E. 2008. Microbiology: Lab theory and application, Brief edition, Morton Publishing Company

Madigan, M. and Martinko, J. 2008. Brock biology of microorganisms, 12th Edition, Pearson Education.

Madsen, E.L. 2008. Environmental microbiology: From genomes to biogeochemistry, John Wiley & Sons.

Salysers, A.A., Whitt, D.D. 2001. Microbiology, diversity, disease, and the environment. Fitzgerald Science Press.

Staley, J.T., Gunsalus, R.P., Lory, S., and Perry, J.J. 2007. Microbial life, 2nd. edition. Sinauer Associates Publishers.